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PUBLICATIONS OF THE UNITED STATES BUREAU OF FISHERIES 1871-1940

SPECIAL SCIENTIFIC REPORT–FISHERIES No. 284

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

EXPLANATORY NOTE

The series embodies results of investigations, usually of restricted scope, intended to aid or direct management or utilization practices and as guides for administrative or legislative action. It is issued in limited quantities for official use of Federal, State or cooperating agencies and in processed form for economy and to avoid delay in publication.

United States Department of the Interior, Fred A. Seaton, Secretary
Fish and Wildlife Service, Arnie J. Suomela, Commissioner

PUBLICATIONS OF THE UNITED STATES BUREAU OF FISHERIES
1871 - 1940

Compiled by

Barbara B. Aller
Office of Information

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The Bureau was known as the United States Commission of Fish and Fisheries from 1871 to 1903 and was an independent establishment of the Government. It was included in the new Department of Commerce and Labor in 1903 and designated the United States Bureau of Fisheries. In 1913, the Department of Labor was separated and the Bureau of Fisheries was retained in the Department of Commerce. The Bureau was transferred from the Department of Commerce to the Department of the Interior in 1939 and in 1940 was consolidated with the Biological Survey to form the Fish and Wildlife Service.

The first publications issued as separates by the Fish Commission did not have serial numbers printed on them, those being added later by Charles W. Scudder who began the list of publications of the organization. Others maintained the records through the years and among them Jessie L. Drayton deserves special credit. Only the publications that were issued as separates are recorded here. In the early bound volumes a number of historical papers appeared which dealt with the state of various fisheries both here and abroad. These were not published in the regular series and their titles are therefore omitted. References to them may be found in Document 899, "An analytical subject bibliography of the publications of the Bureau of Fisheries 1871 - 1920." by Rose M. E. MacDonald, Appendix 5 to the Report of the Commissioner for 1920 (1921).

With the consolidation of the Bureau of Fisheries and the Biological Survey into the Fish and Wildlife Service, the publications were renamed: Report of the Director; Statistical Digest:Research Report; Circular; with the biological bulletin series becoming the Fishery Bulletin, No. 34 being the last issued under the Bureau of Fisheries.

Publications that are out of print may be consulted in libraries, especially those that are Government depositories. Documents now available for purchase are listed in Price List 21 obtainable from the Superintendent of Documents, Washington 25, D. C.

THE SERIES

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		Investigational Reports..	1 - 44.
		Fishery Circulars.....	1 - 28.

A key to abbreviations in the index is given on page 126.

To make the record of printed publications as complete as possible mention should be made of the Fisheries Service Bulletin which was published primarily for employees of the Bureau of Fisheries, June 1915 through December 1940, Nos. 1 - 307. It contained information concerning the various activities of the Bureau during the preceding month and served as a medium for official communication between the administrative officers and all employees.

COMMISSIONERS OF FISHERIES

Spencer F. Baird	1871 - 1887.
G. Brown Goode	1887 - 1888.
Marshall McDonald	1888 - 1895.
Herbert A. Gill (acting)	1895 - 1896.
John J. Brice	1896 - 1898.
George M. Bowers	1898 - 1913.
Hugh M. Smith	1913 - 1921.
Henry O'Malley	1922 - 1932.
Frank T. Bell	1933 - 1939.
Charles E. Jackson (acting)	1939 - 1940.

In accordance with the President's Reorganization Plan No. 2, the Bureau of Fisheries was transferred from the Department of Commerce to the Department of the Interior on July 1, 1939; and by Reorganization Plan No. 3 it was merged with the Bureau of Biological Survey on June 30, 1940, to form the Fish and Wildlife Service.

This series includes Documents 1 - 1102. With a few exceptions, the Documents were assembled in volumes and bound in the Report of the Commissioner of Fisheries and in the Bulletin of the Bureau of Fisheries.

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1. Memoranda of inquiry relative to the food-fishes of the United States. By Spencer F. Baird and Theodore Gill. Report of U. S. Commission of Fish and Fisheries for 1871-72, pp. 1-3, (1873).

2. Questions relative to the food-fishes of the United States. By Spencer F. Baird and Theodore Gill. Report of U. S. Commission of Fish and Fisheries for 1871-72 (1873), pp. 3-6.

3. Report on the condition of the sea fisheries of the south coast of New England in 1871 and 1872. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1871-72 (1873), pp. I-XLI.

4. Report of the Commissioner for 1872-73. A.-Inquiry into the decrease of the food-fishes. B.-The propagation of food-fishes in the waters of the United States. By Spencer F. Baird. Report of U. S. Fish Commission for 1872 and 1873, vol. II, (1874), pp. I-CII.

5. Crustacea of the fresh waters of the United States. By Sidney I. Smith. Report of the U. S. Fish Commission for 1872-73 (1874), pp. 637-665.

6. Sketch of the invertebrate fauna of Lake Superior. By Sidney I. Smith. Report of U. S. Fish Commission for 1872-73 (1874), pp. 690-707.

7. Food of fresh-water fishes. By Sidney I. Smith. Report of U. S. Fish Commission for 1872-73 (1874), pp. 708-709.

8. Synopsis of North American fresh-water leeches. By A. E. Verrill. Report of U. S. Fish Commission for 1872-73 (1874), pp. 666-689.

9. Natural and economical history of the Gourami. By Theodore Gill. Report of U. S. Fish Commission for 1872-73 (1874), pp. 710-728.

10-13 Plan of inquiry into the history and present condition of the fisheries of the United States. By G. Brown Goode. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), pp. 1-52.

10. Questions relative to the cod and cod fisheries. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), pp. 31-36.

11. Questions relative to the mackerel and mackerel fisheries. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), pp. 36-40.

12. Questions relative to the alewife and alewife fisheries. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), pp. 40-44.

13. Questions relative to the smelt and the smelt fisheries. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), pp. 44-48.

14. List of marine algae of the United States. By W. C. Farlow. Report of U. S. Commission of Fish and Fisheries for 1873-75 (1876), vol. III, pp. 691-718.

15. Report of the Commissioner for 1873-74 and 1874-75. A.-Inquiry into the decrease of the food-fishes. B.-The propagation of food-fishes in the waters of the United States. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1873-74 and 1874-75 (1876), pp. VII-LI.

16. Hints for emergencies. Prepared for the use of field parties of the United States Fish Commission.[1] By J. H. Kidder, 1877, pp. 1-7.

17. Report of the Commissioner for 1875-76. A.-Inquiry into the decrease of food-fishes. B.-The propagation of food-fishes in the waters of the United States. By Spencer F. Baird. Report of the U. S. Commission of Fish and Fisheries for 1875-76 (1878), pp. 1-50.

18. History of the menhaden fisheries. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1877 (1879), pp. 1-529, plates I-XXXI.

19. List of the fishes of Essex County, including those of Massachusetts Bay, according to the latest results of the work of the U. S. Fish Commission. By G. Brown Goode and Tarleton H. Bean. (From the Bulletin of the Essex Institute, vol. XI, p. 38.)

20. Statistics of the coast and river fisheries.[1] By Spencer F. Baird. 1879. 4 pp.

21. Cheap fixtures for hatching of salmon. By Charles G. Atkins. Report of U. S. Commission of Fish and Fisheries for 1878 (1880), vol. VI, pp. 945-966, 15 figs.

22. Returns of circular relating to fish trade and consumption of fish.[1] By Spencer F. Baird, Francis A. Walker, and G. Brown Goode. (Published by U. S. Census Bureau. No. 7-032, 2 eds., pp. 1-34, July 8, 1879.)

23. Plan of inquiry into the history and present condition of the fisheries of the United States. By G. Brown Goode. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), vol. VIII, pp. 3-52.

24. Specifications for building the screw-steamer Fish-Hawk.[1] By C. W. Copeland. (Published by the U. S. Lighthouse Establishment.) 1879, 46 pp., 4 pls.

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[1] Issued as a pamphlet only.

25. Report of the Commissioner for 1877. A.-Inquiry into the decrease of food-fishes. B.-Propagation of food-fishes in the waters of the United States. By S. F. Baird. Report of U. S. Commission of Fish and Fisheries for 1877 (1879), vol. V, pp. 1-48.

26. On artificial refrigeration. By John Gamgee. Report of U. S. Commission of Fish and Fisheries for 1877 (1879), pp. 901-972.

27. The carp and its culture in rivers and lakes, and its introduction into America. By Rudolph Hessel. Report of U. S. Commission of Fish and Fisheries for 1875-76 (1878), vol. IV, pp. 865-900, 6 figs.

28. Report of the Commissioner for 1878. A.-Inquiry into the decrease of food-fishes. B.-Propagation of food-fishes in the waters of the United States. By Spencer F. Baird. Report of U. S. Fish Commission for 1878 (1880), vol. VI, pp. XV-LXIV.

29. Circular in reference to shipping fresh fish and other animals. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1881. (Published by the Smithsonian Institution, 1881, pp. 1-4.) Smithsonian Miscellaneous Collections 384.

30. Directions for collecting and preserving fish. By Tarleton H. Bean. Bulletin of the U. S. Fish Commission for 1883, vol. III, pp. 197-200. (1883).

31. The winter haddock fishery of New England. By G. Brown Goode and J. W. Collins. Bulletin of the U. S. Fish Commission for 1881 (1882), vol. I, pp. 226-235.

32. Report on the marine Isopoda of New England and adjacent waters. By Oscar Harger. Report of the U. S. Fish Commission for 1878 (1880), vol. VI, pp. 297-462, plates I-XIII.

33. A report on the history and present condition of the shore cod fisheries of Cape Ann, Massachusetts, together with notes on the natural history and artificial propagation of the species. By Edward R. Earll. Report of U. S. Fish Commission for 1878 (1880), vol. VI, pp. 685-740.

34. Reports on the pycnogonida of New England and adjacent waters. By Edmund B. Wilson. Report of U. S. Fish Commission for 1878 (1880), vol. VI, pp. 463-506, plates I-VII.

35. Specifications for the paddlewheel steam seine boat Canvas-Back, for service on the bay and river fisheries.[2] By S. F. Baird. 1882, pp. 1-12.

36. The marine algae of New England. By W. G. Farlow. Report of the U. S. Commission of Fish and Fisheries for 1879 (1882), vol. VII, pp. 1-210, plates I-XV.

2/ Issued as a pamphlet only.

37. Gill nets in the cod fishery. A description of the Norwegian cod nets, with directions for their use, and a history of their introduction into the United States. By J. W. Collins. Bulletin of the U. S. Fish Commission for 1881 (1882), vol. I, pp. 1-17, plates I-XII.

38. Specifications for building the screw-steamer Albatross for the United States Commission of Fish and Fisheries. By Charles W. Copeland, Nov. 8, 1881.[3/] (Published by the U. S. Light-house Establishment.) pp. 1-51.

39. Directory of officers, collaborators, and employes of the Smithsonian Institution, National Museum, Geological Survey, and Fish Commission.[3/] By S. F. Baird. Jan. 1882, pp. 1-8.

40. Popular extracts from the investigation of the Commission for the scientific examination of the German Seas. By H. A. Meyer, K. Mobius, G. Karsten, and V. Hensen. Report of U. S. Commission of Fish and Fisheries for 1879 (1882), vol. VII, pp. 525-557, 17 figs.

41. List of dredging stations of the U. S. Fish Commission from 1871 to 1879, inclusive, with temperature and other observations. By Sanderson Smith and Richard Rathbun. Report of U. S. Commission of Fish and Fisheries for 1879 (1882), vol. VII, pp. 559-601.

42. Report on the cephalopods of the northeastern coast of America. By A. E. Verrill. Report of U. S. Commission of Fish and Fisheries for 1879 (1882), vol. VII, pp. 211-455, plates I-XLVI.

43. The halibut fishery, Davis Strait. By Newton P. Scudder. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), pp. 189-226.

44. Memorandum for the construction of a harbor of refuge at Woods Hole, Massachusetts.[3/] By Spencer F. Baird, April 28, 1882, pp. 1-6.

45. Statistics of the fisheries of Maine.[3/] By R. Edward Earll. U. S. Census Bulletin No. 278, Washington, pp. 1-47.

46. Report of the Commissioner for 1879. A.-Inquiry into the decrease of the food-fishes. B.-The propagation of food-fishes in the waters of the United States. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1879 (1882), vol. VII, pp. XI-LI.

47. Report of a committee of the Wyoming Historical and Geological Society on the early shad fisheries of the north branch of the Susquehanna River. By Harrison Wright, (chairman of the committee) Bulletin of U. S. Fish Commission for 1881 (1882), vol. I, pp. 352-379.

[3/] Issued as a pamphlet only.

48. Descriptions of nineteen new species of fishes from the Bay of Panama. By David S. Jordan and C. H. Gilbert. Bulletin of U. S. Fish Commission for 1881 (1882), vol. I, pp. 306-335.

49. U. S. Commission of Fish and Fisheries. Laws and regulations.[4]/ By S. F. Baird. Washington, 1882, pp. 1-32.

50. Classification of exhibits at London, England, Fishery Exhibition.[4]/ By Spencer F. Baird. U. S. Commission of Fish and Fisheries, May 5, 1882. pp. 1-3.

51. Materials for the history of the swordfishes. By G. Brown Goode. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), vol. VIII, pp. 287-294, plates I-XXIV.

52. Materials for a history of the mackerel fishery. By G. Brown Goode, and J. W. Collins, R. E. Earll, and A. Howard Clark. Report of U. S. Commission of Fish and Fisheries for 1881 (1884), vol. IX, pp. 91-531, 1 plate.

53. Inducements offered fishermen to furnish shad eggs for the U. S. Commission of Fish and Fisheries. By Spencer F. Baird. Bulletin of the U. S. Fish Commission for 1882 (1883), vol. II, pp. 389-391.

54. Preliminary catalogue and synopsis of the collections exhibited by the United States Fish Commission and by special exhibitors, with a concordance to the official classification of the exhibition.[4]/ By S. F. Baird. London, England, Exhibition, part A, pp. 1-107.

55. Collection of economic crustaceans, worms, echinoderms, and sponges. By Richard Rathbun. Great International Fisheries Exhibition, London, England, 1883.

56. Catalogue of the aquatic and fish-eating birds.[4]/By Robert Ridgway. Exhibited by the U. S. National Museum. London, England, Exhibition. Part C, pp. 1-46, May 22, 1883.

57. Catalogue of the economic mollusca and the apparatus and appliances used in their capture and preparation for market, exhibited by the United States National Museum.[4]/By Lieut. Francis Winslow, U. S. Navy. London, England, Exhibition. Part D, pp. 1-86.

58. The whale fishery and its appliances.[4]/By James Temple Brown. June 14, 1883. London, England, Exhibition. Part E, pp. 1-116.

59. Catalogue of the collections of fishes exhibited by the United States National Museum.[4]/By Tarleton H. Bean. Great International Fisheries Exhibition. London, England, 1883, part F, pp. 1-124.

60. The Spanish mackerel, Cybium maculatum (Mitchell) Agassiz; its natural history and artificial propagation, with an account of the origin and development of the fishery. By R. E. Earll. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), vol. VIII, pp. 395-426, plates I-III.

4/ Issued as a pamphlet only.

61. Specifications for the superstructure of the fishway proposed for Great Falls, Potomac River, Maryland.[5] By Marshall McDonald. July 13, 1883, pp. 1-3.

62. Report of the Commissioner for 1880. A.-Inquiry into the decrease of food-fishes. B.-Propagation of food-fishes in the waters of the United States. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1880 (1893), vol. VIII, pp. XVII-XLVI.

63. Fresh-water sponges; what, where, when, and who wants them. By Edward Potts. Bulletin of the U. S. Fish Commission for 1883, vol. III, pp. 389-391, 1 fig. (1883).

64. Answers to one hundred and eighteen questions relating to German carp. By Charles W. Smiley. Bulletin of the U. S. Fish Commission for 1883, vol. III, pp. 241-248, 8 figs. (1883).

65. Report of the Commissioner for 1881. By Spencer F. Baird. Report of the Commission of Fish and Fisheries for 1881 (1884), vol. IX, pp. XIII-LXXI.

66. Notes on the edible qualities of German carp, and hints about cooking them. By Charles W. Smiley. Bulletin of the U. S. Fish Commission for 1883, vol. III, pp. 305-332. (1883).

66. The German carp, and its introduction into the United States. By Charles W. Smiley. Bulletin of the U. S. Fish Commission for 1883, vol. III, pp. 333-336.

67. Rearing oysters from artificially fertilized eggs, with note on pond culture. By John A. Ryder. Bulletin of U. S. Fish Commission for 1883, vol. III, pp. 281-294.

68. The Annelida Chaetopoda from Provincetown and Wellfleet, Massachusetts. By H. E. Webster and James E. Benedict. Report of U. S. Commission of Fish and Fisheries for 1881 (1884), vol. IX, pp. 699-747, plates I-VIII.

69. Descriptive catalogue of the collection illustrating the scientific investigation of the sea and fresh waters.[5] By Richard Rathbun, London, England, Exhibition, part G, pp. 1-109.

70. Report on the construction and work in 1880 of the Fish Commission steamer Fish Hawk. By Z. L. Tanner. Report of U. S. Commission of Fish and Fisheries for 1881 (1884), vol. IX, pp. 3-52, plates I-XVIII, 3 figs.

71. A contribution to the embryography of osseous fishes, with special reference to the development of the cod (Gadus morrhua). By John A. Ryder. Report of Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 455-605, plates I-XII, 11 figs.

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[5] Issued as a pamphlet only.

72. Annual report on the electric lighting of the United States steamer Albatross, December 31, 1883. By Past Assistant Engineer G. W. Baird, U. S. N. Bulletin of the United States Fish Commission for 1884, vol. IV, pp. 153-158, 8 figs.

73. Annual report on the electric lighting of the U. S. F. C. steamer Albatross, December 31, 1883, By G. W. Baird. Bulletin of the Fish Commission for 1884, vol. IV, pp. 153-158, 8 figs. (1886).

74. Catalogue of the aquatic mammals exhibited by the United States National Museum.[6/] By Frederick W. True. London, England, Exhibition. Part H, pp. 1-22.

75. The status of the U. S. Fish Commission in 1884. By G. Brown Goode. Report of U. S. Commission of Fish and Fisheries for 1884 (1886), vol. XII, pp. 1139-1184.

76. On the preservation of embryonic materials and small organisms, together with hints upon embedding and mounting sections serially. By John A. Ryder. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 607-629.

77. Report of the Commissioner for 1882. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. XVII-XCII.

78. Report on the decapod crustacea of the Albatross dredgings off the east coast of the United States in 1883. By Sidney I. Smith. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 345-426, plates I-X.

79. Report on the work of the United States Fish Commission steamer Fish Hawk for the year ending December 31, 1882, and on the construction of the steamer Albatross. By Z. L. Tanner. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 3-34, plates I-III.

80. A new system of fishway building. By Marshall McDonald. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 43-52, plates I-VII.

81. History of the tilefish. By J. W. Collins. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 237-294-a, plates I-II.

82. Notes on the habits and methods of capture of various species of sea birds that occur on the fishery banks off the eastern coast of North America, and which are used as bait for catching codfish by New England fishermen. By J. W. Collins. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 311-338, plate I.

6/Issued as a pamphlet only.

83. Notice of the remarkable marine fauna occupying the outer banks off the southern coast of New England, and of some additions to the fauna of Vineyard Sound. By A. E. Verrill. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 641-669.

84. Physical character of the portion of the continental border, beneath the Gulf Stream, explored by the Fish Hawk, 1880 to 1882. By A. E. Verrill. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 1045-1057, plates I-V.

85. Report on the distribution of carp to July 1, 1881, from young reared in 1879 and 1880. By Charles W. Smiley. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 943-1008.

86. List of the fishes distributed by the United States Fish Commission. By Tarleton H. Bean. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 1039-1044.

87. List of the fishes collected by the United States Fish Commission at Woods Hole, Massachusetts, during the summer of 1881. By Tarleton H. Bean. Report of U. S. Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 339-344.

88. The influence of artificial propagation upon production, illustrated by the salmon work of the Sacramento River, California. By Charles W. Smiley. Bulletin of the U. S. Fish Commission for 1884, vol. IV, pp. 201-202.

89. Suggestions to the keepers of the United States lifesaving stations, light-houses and light-ships, and to other observers, relative to the best means of collecting and preserving specimens of whales and porpoises. By Frederick W. True. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 1157-1182, figs. 5, plates I-XI.

90. The osteology of Amia calva, including certain special references to the skeleton of teleosteans. By R. W. Shufeldt. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 747-878, plates I-XIV.

91. On the cause of the greening of oysters. By M. Puységur. With a supplementary note on the coloration of the blood corpuscles of the oysters. By John A. Ryder. Report of Commission of Fish and Fisheries for 1882 (1884), vol. X, pp. 793-800.

92. The first decade of the U. S. Fish Commission; its plan of work and accomplished results, scientific and economical. By G. Brown Goode. Report of U. S. Commission of Fish and Fisheries for 1880 (1883), vol. VIII, pp. 53-62;(also in Bulletin of U. S. Fish Commission for 1882 (1883), vol. II, pp. 169-178.)

93. Specifications for building a schooner-smack.1/ By J. W. Collins. September 18, 1885.

94. A catalogue of the fishes known to inhabit the waters of North America north of the Tropic of Cancer, with notes on the species discovered in 1883, and 1884. By David S. Jordan. Report of U. S. Fish Commission for 1885 (1887), vol. XIII, pp. 789-973.

95. Report of the Commissioner for 1883. By Spencer F. Baird. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. XVII-XCV.

96. Report on the work of the U. S. Fish Commission steamer Albatross for the year ending December 31, 1883. By Z. L. Tanner. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 117-236, plates I-III.

97. Explorations on the Columbia River from the head of Clark's Fork to the Pacific Ocean, made in the summer of 1883, with reference to the selection of a suitable place for establishing a salmon-breeding station. By Livingston Stone. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 237-258.

98. Contributions to the knowledge of the chemical composition and nutritive values of American food-fishes and invertebrates. By W. O. Atwater. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 433-499, 2 colored plates.

99. Results of the explorations made by the steamer Albatross off the northern coast of the United States in 1883. By A. E. Verrill. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 503-699, plates I-XLIV.

100. List of deep-water mollusca dredged by the U. S. Fish Commission Steamer Fish Hawk in 1880, 1881, 1882, with their range in depth. By Katherine J. Bush. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 701-727.

101. Oligochaetological researches. By Gustav Eisen. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 879-964, plates I-XIX.

102. The aqua-vivarium as an aid to biological research. By William P. Seal. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 965-969, plates I-III.

103. Utilizing water by fish-culture. By Berthold Benecke. Report of U. S. Commission of Fish and Fisheries for 1883 (1885), vol. XI, pp. 1101-1131, plates I-V.

1/ Issued as a pamphlet only.

104. An exposition of the principles of a rational system of oyster culture, together with an account of a new and practical method of obtaining oyster spat on a scale of commercial importance. By John A. Ryder. Report of U. S. Fish Commission for 1885 (1887), vol. XIII, pp. 381-423, plates I-IV.

105. Report on the decapod crustacea of Albatross dredgings off the east coast of the United States during the summer and autumn of 1884. By Sidney I. Smith. Report of U. S. Fish Commission for 1885 (1887), vol. XIII, pp. 605-705, plates I-XX.

106. On the development of osseous fishes, including marine and fresh water forms. By John A. Ryder. Report of the U. S. Fish Commission for 1885 (1887), vol. XIII, pp. 489-604, figs. 7, plates I-XXX.

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Key to Abbreviations

Adm. Rept.	Administrative Report.
A. R.	Annual Report.
Bull.	Bulletin (biological).
E. C.	Economic Circular.
F. C.	Fishery Circular.
I. R.	Investigational Report.
Doc.	Documents.

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